

REMARKS

Favorable consideration and allowance of the subject application are respectfully solicited.

Claims 1-3, 5-9, 11-18 and 20-24 are pending in this application, with Claims 1, 6, 7 and 16 being the independent claims. Claims 1, 6, 7 and 16 are amended herein to recite that the reaction solution comprises a buffer (the feature of Claims 4, 10 and 19) and that the reaction solution contains a metal ion derived from the buffer (see the specification at least at page 8, lines 7-17 and the Examples). Claims 4, 10 and 19 are cancelled herein without prejudice to or disclaimer of the subject matter contained therein. It is submitted that no new matter has been added by the amendments herein.

Claims 1-12, 14-21, 23 and 24 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Koyano et al. (JP 2002-079739) in view of Davis et al. (U.S. Patent No. 5,695,820). Claims 13 and 22 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Koyano et al. in view of Davis et al. and further in view of Matzinger (U.S. Patent No. 6,020,497). Applicants respectfully disagree with these rejections.

Before addressing the merits of the rejections, Applicants believe it will be helpful to review some features and advantages of the present invention. The present invention, as recited in Claim 1, relates to a reaction solution for use in image recording in conjunction with an ink containing a coloring material in a dissolved or dispersed state. The reaction solution destabilizes the dissolved or dispersed state of the coloring material in the ink in contact with the ink. The reaction solution comprises a polyvalent metal ion, an organic solvent, a buffer, and a metal ion derived from the buffer. The reaction solution has a pH of 2 or higher, and has a

buffering action for variations in pH. The buffering action means it can maintain pH variation within the range of 0.5 before and after the addition of 1.0 ml of a 0.1 N aqueous lithium hydroxide solution to 50 ml of the reaction solution. The present invention also relates to a set of an ink and a reactive solution (Claim 6), an ink jet recording apparatus (Claim 7), and an image recording method (Claim 16) using a reaction solution of comparable scope.

The reaction solution as recited in Claims 1, 6, 7 and 16 has a pH that is very stable from the start and throughout prolonged usage. Because of this, high quality images having high density and high color development, without strike-through of the coloring material to the back of the recording medium, can be obtained reliably. Metal ions derived from the buffer contribute to the destabilization of the coloring material to provide the beneficial effects of the present invention. In Applicants' view, the cited references do not teach or suggest the claimed invention.

Koyano et al. discloses the use of a recording liquid (corresponding to the ink in the present invention) and a pretreatment liquid (corresponding to the reaction solution in the present invention). Koyano et al. is not seen to disclose or suggest that the reaction solution contains a buffer or that the reaction solution has a buffering action. Applicants submit that what the Examiner has taken note of regarding the pH is the initial pH adjustment, and that it has nothing to do with the long-term pH stabilization of the present invention.

Davis et al. is not seen to teach or suggest that the reaction solution contains metal ion derived from a buffer. Moreover, Davis et al. is not seen as teaching that the reaction solution has a buffering action as defined in the present invention. Applicants note

that in col. 8 of Davis et al., addition of a buffer is described with specific examples, but submit that they do not contain metal ion. Since the degree of buffering action may vary according to the kind of the salt, the addition amount, and components other than the salt, Applicants submit that one cannot know, based on the disclosure of Davis et al., whether the reaction solution has a buffering effect as defined in the present invention.

Accordingly, Applicants conclude that the present invention is not anticipated or obvious over the combination of Koyano et al. and Davis et al.

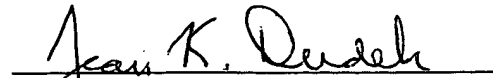
Matzinger, which is cited with respect to the feature that the viscosity of the reaction solution is greater than the viscosity of the ink, does not disclose or suggest that the reaction solution contains a buffering agent. Thus, this reference does not remedy the deficiency of the combination of Koyano et al. and Davis et al.

Applicants submit that the present invention is patentably defined by independent Claims 1, 6, 7 and 16. The dependent claims are also submitted to be patentable for the same reasons as their respective independent claims and because they set forth additional patentable aspects of the present invention. Separate and individual consideration of each dependent claim is respectfully requested.

Applicants submit that the application is in condition for allowance. Favorable consideration, withdrawal of the above-noted rejections, and passage to issue of the application at the Examiner's earliest convenience are respectfully requested.

Applicants' attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,


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